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**REMARKS:****Allowable Subject Matter (item 6 in the final office action)**

Applicants acknowledge the allowance of claims 16-27 and 32-34 with appreciation.

**The Rejection of Claims 10-15 and 28-31 under 35 U.S.C. §102(e) as Being Anticipated by US 6,711,041: Pereira et al (item 5 in the final office action)**

The cited reference was filed on Feb. 11, 2003, and it is a continuation of application No. 09/590,642, now US patent 6,324,087. Applicants' response to this rejection refers to the parent patent of the cited prior art (US 6,324,087).

Pereira et al describe the general method of partitioning a CAM bank by:

- Assigning a "class code" to each CAM bank.
- Generating a "search code" for each search entry and then comparing this search code with the CAM bank class codes to decide which CAM banks should be turned on.

This patent is not implementable unless there is more information given about the "class codes" and "search codes". The method for generation and assignment of the "class codes" to the CAM banks should be specified. Also it should be known that how the "search codes" for each search entry are generated. There are many different ways for doing the above, many of which are not obvious to one skilled in the art by just the knowledge of the cited reference. The cited reference only describes the following two methods/applications:

- 1- Classification of CAM banks based on different classes of networks (Col. 4, lines 58 to Col. 5, line 13): In this case, the "class codes" and "search codes" specify the class of the networks involved, like different virtual private networks (VPN) and Local Area Networks (LAN).
- 2- Classification of CAM banks based on whether they are defective or not (Starting from Col. 8, line 1), to increase manufacturing yield.

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The first application requires a priori knowledge of the network architecture. The second application deals with defective CAM banks and does not deal with the classification of useable CAM banks.

The claims in this application recite specific methods for classification of the routing entries. Item (b) in claim 10 and item (a) in claim 13 specifically recite the use of content comparing memory array or arrays for the classification of content addressable memory banks. The same items in these claims recite the storage of the numerical range of the routing addresses in said content comparing memory array or arrays (range check). Both these distinctions teach specific methods for the classification of content addressable memory banks, as opposed to the general mention of classification in the cited prior art. They also distinguish over the cited prior art by using a numerical range check rather than a simple comparison (Fig. 4 in US patent 6,324,087). Therefore, these components in claims 10 and 13 and as a result in their dependent claims 11, 12, 14, and 15 clearly show novel features and distinguish over Pereira et al under section 102.

To further emphasize the novel features recited in claims 10-15, they are amended as follows:

- Claim 10 is amended to emphasize the numerical range check used in this invention and the division of content addressable memory banks based on these numerical ranges.
- Claim 11 is amended to emphasize the fact that this claim and its results are dependent on claim 10 and that it is not claiming anything related to priority encoders.
- Claim 13 is amended to emphasize the numerical range check used in this invention and the division of monolithic integrated devices based on these numerical ranges.
- Claim 14 is amended to emphasize the fact that this claim and its results are dependent on claim 13 and that it is not claiming anything related to priority encoders.

Claims 28-31 recite a novel method for dividing the routing address space for longest prefix match operation. This division of address space is based on the magnitude of the address as a number. However, since the invention deals with longest prefix match problem, the routing addresses are not numbers in the strict sense. They are binary entities for which some of the LSBs can assume don't care (X) values and they do not have a magnitude as a result. For

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example 121.71.32.X, which is 01111001.01000111.00100000.xxxxxxxx in binary, is one such address. Any number that has the same 24 MSBs and has any arbitrary 8 LSBs matches this example address. A closer examination shows that any number in the range 121.71.32.0 to 121.71.32.255 matches the example address. Therefore, address 121.71.32.X can now be represented with a range of numbers. Claims 28-31 recite the novel idea of using this observation to transform routing addresses to a collection of real numbers and then combining this with the idea of dividing the address space to "storage and search" subclasses based on the magnitude of the numbers. The claims then recite the providing of means to perform arithmetic "greater than or equal to" (or "smaller than or equal to") comparison to activate the appropriate "storage and search" subclass or subclasses. This novel method is not anticipated by Pereira et al in any form. Claims 28, 29 and 31 recite this novel method for different levels of hierarchy. Claim 30 adds the classification of the routing addresses based on their prefix length. Although the classification based on prefix length is anticipated by Pereira et al., it is recited in combination with novel ideas of claim 28. Based on the observations above, applicants submit that claims 28-31 clearly recite novel subject matter, which distinguishes over what is anticipated by Pereira et al.

To further emphasize the novel features recited in claims 28-31, they are amended as follows:

- Claims 28, 30, and 31 are amended to emphasize the fact that address range in these claims and throughout this application is referring to the numerical address range, rather than just a collection of addresses.
- Claim 29 is amended because the term "deterministically" is redundant.
- Claim 30 is amended to emphasize the fact that this claim is not claiming anything related to priority encoders.

The applicants also wish to point out that the methods and apparatus described in this patent application are not obvious to one skilled in the art and that they produce new and unexpected results. They allow the routing address classification to be done in a deterministic fashion, as opposed to other methods described in prior art. The methods are also specific enough to be implementable, contrary to what is recited by Pereira et al. Since they are based on mathematical properties of the entries, they are also general in the sense that they do not depend on the type of

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network or any other a priori assumption. Furthermore, they facilitate a streamlined update mechanism for the routing address tables.

**Other Prior Art Made of Record and Not Relied Upon in This Office Action**

Other reference cited in the final office action, US patent 6,069,573 (Clark, II et al.), has also been reviewed by the applicants.

Clark, II et al. discuss the idea and implementation of priority encoding in a content addressable memory array. The applicants' invention is not related to Priority encoding and its related methods. Priority encoding had only been mentioned in claims 11, 14, and 30 to explain the benefits of what were recited in those claims and it is now removed to clear any issues. Therefore, this reference does not show applicants' invention or render it obvious.

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## CONCLUSION

For all the above reasons, applicants submit that claims 10-15 and 28-31, as amended, are allowable over the cited references and solicit reconsideration and allowance.

## Conditional Request for Constructive Assistance

Applicants have amended the rejected claims of this application to strengthen the reasoning that they are proper, definite, and define novel structure and method which are also unobvious. If, for any reason, these claims are not believed to be in full condition for allowance, applicants respectfully request the constructive assistance and suggestions of the Examiner pursuant to M.P.E.P. § 2173.02 and § 707.07(j) in order that the undersigned can place the rejected claims in allowable condition as soon as possible.

Very Respectfully,

  
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**Certificate of Transmission/Mailing.** I hereby certify that on the date shown below I will either fax this communication, and attachments, to GAU 2186 of the U.S. Patent and Trademark Office at 703-872-9306 or deposit it with the United States Postal Service with sufficient postage as first class mail in an envelope addressed to: Commissioner for Patents, PO Box 1450, Alexandria, VA 22313-1450.

Date: 2/3/2005

Inventor's Signature:

